

EXPERIMENTAL CONTROL OF SEXUAL DEVIATION THROUGH MANIPULATION OF THE NOXIOUS SCENE IN COVERT SENSITIZATION¹

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Pedophilic behavior in one *S* and homosexual behavior in another *S* were decreased, increased, and once again decreased by introducing, removing, and reintroducing the noxious scene in covert sensitization, a form of aversion therapy. The results indicated that verbal description of a nauseous scene was an effective aversive stimulus, and that pairing this scene with scenes of the undesired behavior was responsible for declines in deviant sexual behavior during covert sensitization.

The treatment of sexual deviation by aversion therapy has recently become more popular (Feldman, 1966). All studies reported to date, however, are either uncontrolled single case reports or uncontrolled group outcome studies. It is not possible to determine from such data whether the reported success is due to the conditioning technique or to another of the myriad of variables present either singly or in combination in the therapeutic situation.

The usual way to isolate relevant treatment variables is the group comparison in which a control group experiences the same treatment as an experimental group with the exception of the independent variable. Group differences are then ascribed to the independent variable. An alternative method used in this study is to demonstrate experimental control in individual cases. One way of doing this is to sequentially vary some aspect of treatment while measuring associated changes in a well-specified, clinically relevant behavior (cf. Agras, Leitenberg, & Barlow, 1968; Leitenberg, Agras, Thomson, & Wright, 1968; Wolf, Birnbrauer, Williams, & Lawler, 1965).

¹This study was supported in part by United States Public Health Service Clinical Research Center Grant FR-109 and National Institute of Mental Health Grant MH-13651. Part of the data was presented at the meeting of the Eastern Psychological Association, Washington, D. C., April 1968.

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In this experiment the aversion therapy studied was covert sensitization (Cautela, 1966). In this procedure, descriptions of extremely noxious scenes are paired with scenes of the undesired behavior. Uncontrolled case studies suggest that covert sensitization may modify sexual deviation. Cautela (1967) treated two homosexuals with this method resulting in reports by the patients of decreases in homosexual behavior, while Davison (1968) treated a case of long-standing sadistic fantasies with a combination of covert sensitization and positive conditioning to heterosexual stimuli and achieved a remission. Other case studies include Kolvin's (1967) successful treatment of a fetish.

The crucial procedure in covert sensitization is thought to be the pairing of verbal descriptions of a noxious scene with descriptions of scenes involving the undesired behavior. This notion was tested in the present study in two cases of sexual deviation by first pairing the two scenes, then removing the noxious scene while holding other variables constant, and finally pairing the scenes once more. If the pairing procedure is critical to therapeutic success, then any improvement should be reversed or stopped when the noxious scene is removed.

METHOD

Subjects. The *S*₁ was a 25-yr.-old married male who reported a 13-yr. history of pedophilic experiences ranging from fantasies to several instances of sexual contact. He came for treatment after the solicitation of a neighbor's 9-yr.-old daughter was discovered. The neighbor, rather than report him to

the police, insisted that he seek psychiatric help. Sexual relations with his wife averaged twice a month.

The S_2 was a 32-yr.-old married male who reported a 14-yr. history of homosexual experiences averaging about three contacts per week, usually in public toilets. He recently had fallen in love with a "boyfriend," which was threatening his marriage and which motivated him to seek treatment. Sexual relations with his wife, although prevalent early in the marriage, had been virtually nonexistent for the previous 3 yr.

Measures. A hierarchy of sexually arousing scenes was constructed. For S_1 the hierarchy contained 45 scenes involving small girls. For example, the top item in the hierarchy was, "You are alone in a room with a very sexy looking 10-year-old girl with long blond hair." One of the least arousing items was, "While driving in your car you can see a small, thin, six-year-old girl walking down the street." For S_2 the hierarchy contained 27 scenes involving males. The top scene in this hierarchy pictured a "30-year-old, well-built, good-looking fellow, dressed neatly and standing in a large rest room." At the other end of the hierarchy was "an older, sloppily-dressed fellow" in the same location. Five scenes involving the boyfriend were added to these 27 items. The five scenes ranged from sexual contact to talking with him on the telephone. Thus, the total number of items was 32.

Base-line procedures were then instituted for five sessions, during which three measures were taken: First, S_s kept a small notebook in which they recorded each time that they were sexually aroused, for S_1 by the sight of an immature girl, and for S_2 by the sight of a mature male. The S_1 , as an outpatient, recorded these events daily. Due to the distance of his home from the treatment center, S_2 remained in the hospital during the week and returned home on weekends. He was, therefore, instructed to visit one of the local bars 4 nights a week for 1-2 hr., during which time he recorded incidents of sexual arousal.

Second, the hierarchy scenes were typed on individual cards. For S_1 the 45 cards were divided into five packs of 9 cards each, chosen in such a way that each pack contained an equally arousing set of scenes. The 32 cards of S_2 were not divided. The S_1 then was given one of the packs, while S_2 was given the whole set. On every experimental day each S was asked to enter a separate room where he could sort each of the cards into one of five envelopes marked 0-4. He was told,

The numbers on the envelopes represent amount of sexual arousal, 0 equals no arousal, 1 equals a little arousal, 2 a fair amount, 3 much, and 4 very much arousal. I would like you to read the description of each scene and place a card in the envelope which comes closest to how arousing the scene is to you at this moment.

If he then put one card in the Number 4 envelope and one in the Number 3 envelope, his score to that point would be 7.

Third, galvanic skin responses (GSRs) were re-

corded from a Grass polygraph (Model 7) with silver, silver-chloride, palmar and wrist electrodes to six selected scenes from the hierarchy of each S . The same six scenes were used throughout the experiment. The S was relaxed and then asked to close his eyes and imagine the scene as clearly as possible. GSR deflection was measured as change in log conductance that was averaged for the six scenes. This measure was taken during every session of the base line and before every second session during treatment.

Procedure. During the initial interview S_s were told,

We view this type of problem as a bad habit that has been picked up over the years and we are going to try to break that habit. We will be using some techniques that have been found effective in dealing with bad habits such as this one. However, no matter how successful, every treatment has its ups and downs so don't get discouraged.

This last sentence was designed to allay any fear of ultimate failure that might have arisen when extinction procedures were later introduced. The S_s were then trained in deep muscle relaxation following the method described by Jacobson (1938). The highest six items in S_1 's hierarchy were chosen for sensitization. The S_1 was seen twice a week as an outpatient. Since S_2 's major problem at the outset was an "overwhelming" attraction for his boyfriend, the five scenes describing the boyfriend were chosen for sensitization along with one scene concerning sexual contact with "pickups" in public toilets. The S_2 was seen 5 days a week as an inpatient, and from Experimental Day 12 on was generally seen twice a day.

In each session S_s were given relaxation instructions and presented with eight scenes. In four scenes S was described approaching the small girl (male), feeling nauseous and vomiting. For example, in one of the homosexual scenes, S_2 was described approaching his boyfriend's apartment.

As you get closer to the door you notice a queasy feeling in the pit of the stomach. You open the door and see Bill lying on the bed naked and you can sense that puke is filling up your stomach and forcing its way up to your throat. You walk over to Bill and you can see him clearly, as you reach out for him you can taste the puke, bitter and sticky and acidic on your tongue, you start gagging and retching and chunks of vomit are coming out of your mouth and nose, dropping onto your shirt and all over Bill's skin.

The description of the nauseous scene was usually expanded and lasted from 30 to 60 sec. In the remaining four scenes S would be described approaching the small girl (male) and beginning to feel nauseous. At that point he would turn, start walking away from the scene, and immediately feel relieved and relaxed. The scenes were presented randomly. The sexually arousing scene was presented for approximately 10 sec., the nauseous scene for 30-60 sec., with an intertrial interval of 30 sec.

After 6 acquisition sessions consisting of 48 pairings for S_1 , and 13 acquisition sessions consisting of 104 pairings for S_2 , extinction was introduced. The

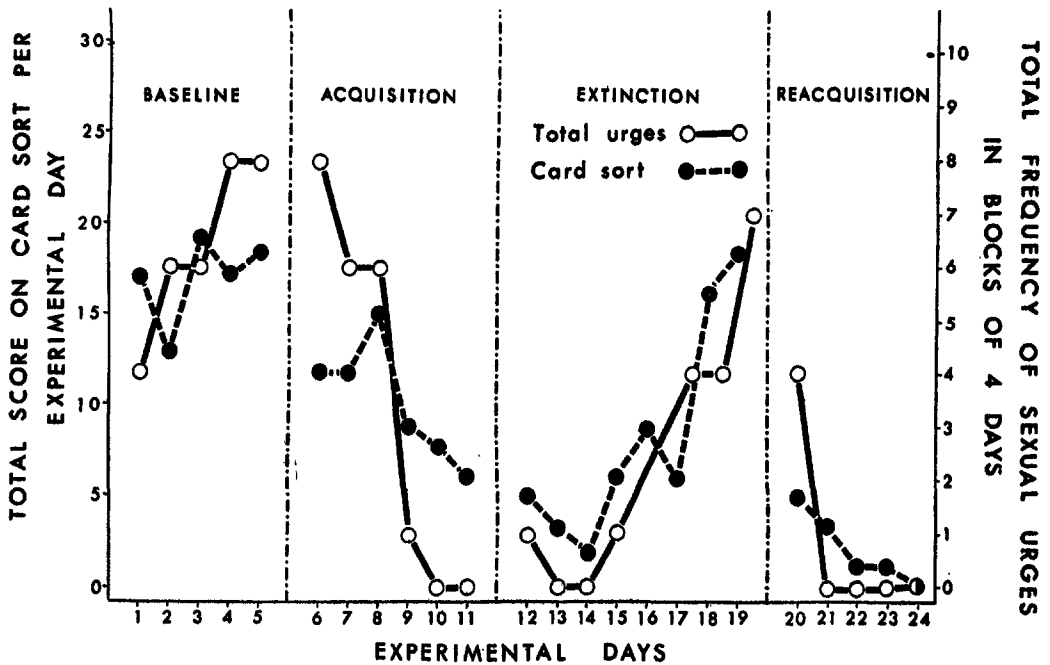


FIG. 1. Total score on card sort per experimental day and total frequency of pedophilic sexual urges in blocks of 4 days surrounding each experimental day. (Lower scores indicate less sexual arousal.)

S was told, "For the next few sessions we are going to change the procedure a bit. We have found that this is the best course of action at this time. Remember to imagine only what I describe." Note that instructions during extinction suggest continued progress. The procedure during extinction consisted of presenting the sexually arousing scene for 10 sec., leaving the 30-sec. nauseous interval blank, and saying, "Stop imagining that," at the end of the interval. All other therapist behaviors remained constant.

After eight extinction sessions consisting of 64 scene presentations for each S, reacquisition was introduced. The design, then, consists of base-line measures; acquisition, in which sexually arousing scenes are paired with nauseous scenes; extinction, in which sexually arousing scenes are presented alone; and reacquisition.

RESULTS

Figure 1 plots the total score of the card sort for each experimental day and the total frequency of sexual arousal in blocks of 4 days surrounding each experimental day for S₁. These 4 days consisted of the 2 days before the session, the day of the session, and the day after the session.

During the base-line phase there was no treatment. The card sort remained stable during this period while reports of pedophilic urges steadily rose. Acquisition, in which the

nauseous scene was paired with the sexually arousing scene, resulted in a sharp drop in both measures of inappropriate sexual arousal. In extinction the nauseous scene was omitted, resulting in an increase in both measures of sexual arousal.

The instruction preceding this extinction phase conveyed an expectancy of therapeutic progress. This expectancy was verified when S said, toward the end of extinction, "I know you're doing your best, but I guess I'm just not cut out for this treatment." At this time S₁ became upset and depressed.

In reacquisition, the nauseous scene was reintroduced and measures of sexual arousal dropped to zero. During this phase S₁ reported increased heterosexual behavior.

GSR, analyzed as change in log conductance, was averaged over each of the four experimental periods. The means (*M*s) and standard deviations (*SD*s) in μ mhos are: base line, $M = 221$ and $SD = 141$; acquisition, $M = 27$ and $SD = 29$; extinction, $M = 200$ and $SD = 92$; reacquisition, $M = 30$ and $SD = 23$.

Although there is a great deal of variability, it is clear that S₁'s arousal rose during extinction and declined during reacquisition.

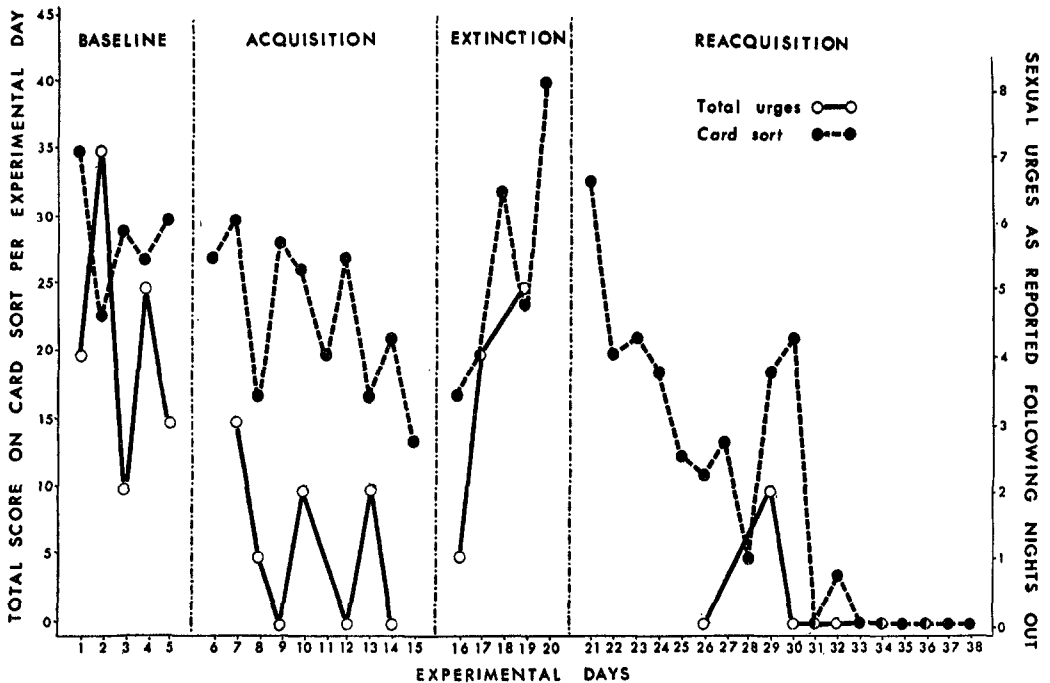


FIG. 2. Total score on card sort per experimental day and homosexual urges as reported following nights out. (Lower scores indicate less sexual arousal.)

Figure 2 plots the total score of the card sort on each experimental day for S_2 and also the frequency of sexual arousal on each night out. For various reasons S_2 was not able to go out each day that sessions were held. At one point an illness prevented him from visiting the local bars for 4 consecutive nights (Experimental Days 22–25). Therefore, points referring to frequency of sexual arousal are plotted only on experimental days for which there are data.

During the base-line phase both the card sort and reports of homosexual urges were relatively stable. The acquisition phase resulted in a drop in both measures of sexual arousal. In the course of extinction both measures rose sharply with the total score of the card sort rising above base-line levels.

During this phase S_2 also became depressed, and near the end of the period said: "This treatment isn't doing much good. I'm just as bad now as I was when I came in." At this time he engaged in his first homosexual affair since treatment began. Due to an illness of the therapist, there was a 9-day period be-

tween Experimental Days 20–22 during which S was only seen once (Day 21). Throughout this period S_2 generally refused to leave the hospital, even for the weekend, and remained quite depressed.

In reacquisition, measures of sexual arousal dropped to zero. All sessions beyond the twentieth session (Day 31) were self-administered. At this time, S_2 also reported increases in heterosexual behavior and acquisition of heterosexual fantasies.

Although mean magnitude of GSR declined sharply during acquisition, it did not recover during extinction and therefore could not be interpreted.

DISCUSSION

These findings demonstrate that pairing a noxious scene with a sexually arousing scene is a crucial procedure in covert sensitization. The effect of this pairing was separated from other psychotherapeutic variables such as therapeutic instructions, patient expectancies of improvement, and rapport between patient and therapist since these variables were still

present during extinction when the noxious scene was removed, and yet behavior repressed.

The two noxious stimuli most often used in aversion therapy are emetic drugs (James, 1962) and more recently shock (Feldman & MacCulloch, 1965). This experiment demonstrates that an intensely imagined noxious scene can also act as an effective aversive stimulus. There would seem to be several advantages to using a noxious scene in clinical situations. First, the patient is less likely to refuse treatment because of the pain involved, (Rachman, 1965). Second, it can be widely employed by many therapists, since it does not require drugs or apparatus.

Generally, there have been two therapeutic strategies in dealing with sexual deviations: decreasing deviant sexual behavior and increasing appropriate heterosexual behavior. This experiment indicates that covert sensitization alone is sufficient to decrease deviant behavior. More controlled research employing precise measures of heterosexuality is needed to determine what treatment variables are responsible for increases in heterosexual behavior. Further research is also necessary to ascertain whether reductions in deviant behavior resulting from covert sensitization would be maintained without continued treatment and careful attention to later sexual adjustment.

The present study does not completely overcome a measurement problem common to most psychotherapy research, namely, an excessive reliance on the patient's subjective reports of progress. Although there is evidence that GSR is a valid index of sexual arousal (Solyom & Beck, 1967; Wenger, Averill, & Smith, 1968), the remaining measures are not behavioral in the sense of being publicly observable. While observable and objective behavioral measures have been devised for some neurotic (e.g., Leitenberg et al., 1968) and psychotic disorders (Ayllon & Azrin, 1965), it is more difficult in cases of sexual deviation where more than one person is involved. Recent studies in our laboratory and elsewhere (McConaghy, 1967), however, suggest that changes in penile volume to slides of inappropriate sexual objects, a measure originally devised by Freund (1963), may be useful in the measurement of sexual deviation.

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(Received July 26, 1968)